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Utility Patent Application Transmittal

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No. 8733.20011

First Named Inventor or Application Identifier

Hee Young YUN, et al.

Express Mail Label No.

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
Washington, D.C. 20231

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ Fee Transmittal Form (submit original and a duplicate)

Specification - Total Pages 19

Drawing(s) (35 USC 113) - Total Sheets 7

Oath or Declaration - Total Pages 4

- a. ☐ Newly-executed (original or copy)
b. ☐ Unexecuted for information purposes
c. ☒ Copy from a prior application (37 CFR 1.63(d)
(for continuation/divisional with Box 17 completed)

[Note Box 5 below]

- d. ☐ **DELETION OF INVENTORS**
Signed Statement attached deleting inventor(s)
named in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b)

5. ☒ Incorporation By Reference (usable if Box 4c is checked)
The entire disclosure of the prior application, from which
a copy of the oath or declaration is supplied under Box 4c,
is considered as being part of the disclosure of the
accompanying application and is hereby incorporated by
reference therein.

6. ☐ Microfiche Computer Program (Appendix)

7. ☐ Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)

- a. ☐ Computer Readable Copy
b. ☐ Paper Copy (identical to computer copy)
c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet & document(s))
Assignment to: LG LCD, Inc. (in grandparent
application No. 08/888,164, filed July 3, 1997)

9. ☐ 37 CFR 3.73(b) Statement ☐ Power of Attorney
(when there is an Assignee)

10. ☐ English Translation Document (if applicable)

11. ☐ Information Disclosure
☐ Copies of IDS Statement/PTO-1449 citations

12. ☒ Preliminary Amendment

13. ☒ Return Receipt Card (MPEP 503)

14. ☐ Small Entity ☐ Statement filed in prior application
Statement(s) Status still proper and desired

15. ☐ Certified Copy of Priority Document(s)
Korean Application Nos. 97-12899 and 97-14278, filed
April 8, 1997 and April 17, 1997 (in grandparent
application No. 08/888,164, filed July 3, 1997)
(if foreign priority is claimed)

16. ☐ Other:

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No. 09/145,357

18. CORRESPONDENCE ADDRESS

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☒ X

| CLAIMS | NUMBER FILED | NUMBER EXTRA | RATE | CALCULATIONS |
|---|--------------|--------------|------------|--------------|
| Total Claims (37 CFR 1.16(c)) | 7 - 20 | 0 | ✗ \$18.00 | \$ 0.00 |
| Independent Claims** (37 CFR 1.16(b)) | 4 - 3 | 0 | ✗ \$78.00 | \$ 78.00 |
| Multiple Dependent Claims (if applicable) (37 CFR 1.16(d)) | | | ✗ \$260.00 | \$ 0.00 |
| BASIC FEE (37 CFR 1.16(a)) | | | | \$ 760.00 |
| Total of Above Calculations | | | | \$ 838.00 |
| Reduction by 50% for filing by small entity (37 CFR 1.9, 1.27, 1.28) | | | | |
| Total Filing Fee Due | | | | \$ 838.00 |
| Assignment Recordation Fee | | | | \$ 0.00 |
| TOTAL FEES DUE | | | | \$ 838.00 |

****List Independent Claims: 1, 3 and 5**

19. **Small Entity Status**

- a. ☐ A Small Entity Statement is enclosed.
 b. ☐ A Small Entity Statement was filed in the prior nonprovisional application and such status is still proper and desired.
 c. ☐ Small Entity Status is no longer claimed.

20. ☒ A check in the amount of \$ 838.00 to cover the filing fee is enclosed.

21. ☐ Please charge my Deposit Account No. 12-1820 the amount of \$____. A copy of this letter is enclosed.

22. ☐ A check in the amount of \$ 0.00 to cover the recordation fee is enclosed.

23. ☒ The Commissioner is hereby authorized to credit overpayments or charge the following fees during the pendency of this application to Deposit Account No. 12-1820:

- a. ☒ Fees required under 37 CFR 1.16.
 b. ☐ Fees required under 37 CFR 1.17.
 c. ☐ Fees required under 37 CFR 1.18.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

NAME Song K. Jung - Registration No. 35,210

SIGNATURE

DATE June 7, 1999

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Hee Young YUN, et al.

Application No: **Not Assigned**

Filed: **June 7, 1999**

For: **Computer Having Liquid Crystal
Display Between Frames Attached
at the Edges**

Art Unit: TBA

Examiner: TBA

PRELIMINARY AMENDMENT

Asst. Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Prior to issuance of a first Office Action after the filing of a Rule 1.52(b) continuation application, please amend the above-referenced application as follows:

IN THE SPECIFICATION:

Please AMEND the specification as follows:

Page 2, line 19, after "sheet" (second occurrence), insert --diffuser--.

IN THE CLAIMS:

Please CANCEL Claims 2-14 without prejudice.

Please ADD new Claims 15-20 as follows:

15. (NEW) A liquid crystal display device mountable to a housing comprising:

a liquid crystal panel with a display area and a first plurality of side edges;

a support frame having a second plurality of side edges and supporting the liquid crystal panel, at least one side edge of the second plurality of side edges including first and second mounting holes, the first mounting hole being located at a top half of the side edge of the support

frame and the second mounting hole being located at a bottom half of the side edge of the support frame;

wherein the support frame is immovably mounted to the housing simultaneously using the first and second mounting holes at the side edge of the support frame.

16. (NEW) The liquid crystal display device according to claim 15, wherein at least one of the first and second mounting holes has a threaded inner surface for receiving a screw.

17. (NEW) A portable computer comprising:

a liquid crystal display module having a display surface, back surface and a plurality of side edges

an upper casing substantially covering the back surface of the liquid crystal display module;

a lower casing coupled to the upper casing and having an input device;

wherein at least one side edge of the plurality of side edges including first and second mounting holes, the first mounting hole being located at a top half of the side edge of the liquid crystal display module and the second mounting hole being located at a bottom half of the side edge of the liquid crystal display module;

wherein the liquid crystal display module is immovably mounted to the upper casing using the first and second mounting holes at the side edge of the liquid crystal display module.

18. (NEW) The portable computer according to claim 17, wherein at least one of the first and second mounting holes has a threaded inner surface for receiving a screw.

19. (NEW) A portable computer comprising:

a liquid crystal display module having a display surface, back surface and a plurality of side edges;

an upper casing substantially covering the back surface of the liquid crystal display module;

an upper casing substantially covering the back surface of the liquid crystal display module;

a lower casing coupled to the upper casing and having an input device;

wherein at least one side edge of the plurality of side edges including first and second mounting holes, the first mounting hole being located at a top half of the side edge of the liquid crystal display module and the second mounting hole being located at a bottom half of the side edge of the liquid crystal display module;

wherein the first and second mounting holes at the side edge of the liquid crystal display module are engaged to immovably couple the liquid crystal display module to the upper casing.

20. (NEW) The portable computer according to claim 19, wherein at least one of the first and second mounting holes has a threaded inner surface for receiving a screw.

REMARKS

Claims 2-14 are cancelled. New claims 15-20 are added. Examination and consideration of the application, as amended, are respectfully requested.

Applicants' undersigned attorney may be reached at 202-223-5700. All correspondence should continue to be sent to the below-listed address.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 12-1820.

Respectfully submitted,
LOEB & LOEB LLP

Date: June 7, 1999

By: 

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UNITED STATES PATENT APPLICATION

OF

HEE YOUNG YUN,

KYO HUN MOON,

AND

BYEONG YUN LEE

FOR

COMPUTER HAVING LIQUID CRYSTAL DISPLAY

This application claims the benefit of Korean Application No. 12899/1997 filed on April 8, 1997, and Korean Application No. 14278/1997 filed on April 17, 1997, which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a computer, and more particularly, to a display unit of a portable computer.

Discussion of the Related Art

In general, a liquid crystal display(LCD) device used for a computer such as a portable computer or for a portable display is shown in Fig. 1. Referring to Fig. 1, the LCD device includes a liquid crystal panel 20, a back light unit, and a driving circuit board 23. The back light unit is comprised of a luminescent lamp 11, a lamp housing 12 having a U-shape and surrounding the lamp 11, a light guide 13, a reflector 14 reflecting the incident light from the horizontal direction to the vertical direction, a protection sheet 15 contacting the light guide 13, a first prism sheet 16 and a second prism sheet 17 set on the protecting sheet 15 and condensing the incident light from the light guide 13 to some

direction, a diffuser 18 diffusing the light from the first and second prisms 16 and 17 to a viewing area 21 of the liquid crystal panel 20 with a certain viewing angle, and a first support frame 19 supporting these elements.

5 Fig. 3 shows a cross-sectional view of the light-guiding plate 13 showing a gradual thickness decrease in cross-section as it extends away from the light source 11. A fluorescent lamp 11 as the light source is fixed at a thicker end of the light-guiding plate 13. When the fluorescent lamp 11 is turned on, the light 23 from the source 11 is reflected by the lamp housing 12 surrounding the fluorescent lamp 11. The reflected light transmits through the cross-section towards the other side (thinner end) of the light-guiding plate 13 as indicated by the arrows. Then, the light spreads all over the surface of the light-guiding plate 13 and reaches the display area 21 (Fig. 1) through the diffusion plate 18. At the same time, a thin film transistor formed on the liquid crystal panel controls a corresponding pixel according to the signals from the driving circuit 30 (Fig. 1) to selectively transmit the light which collectively realizes the display of images on the display area.

The liquid crystal display is usually combined with, for example, a notebook computer as an output screen. The following

method is used to fix the liquid crystal display to a device such as a notebook computer.

Referring to Figs. 3a and 3b, in a conventional liquid crystal display, a ground supporting plate 30 is disposed on the first fastening frame 19. A mounting hole 33 is formed through the ground supporting plate 30 and the first fastening frame 19, as shown in Fig. 3b. Then, the ground supporting plate 30 and the first fastening frame 19 are fixed by a screw 31 as shown in Fig. 3a. In other words, a liquid crystal display is fixed to a device such as a notebook computer so as to fasten the first fastening frame 19 and the ground supporting plate 30 by a fastening element such as a screw.

However, the liquid crystal display becomes thicker due to the length of the screw according to the method as shown in Figs. 3a and 3b. Moreover, since the mounting hole 33 for the screw is formed on the front surface of the liquid crystal display, the display area of the liquid crystal display becomes narrow.

According to the structure described above, the LCD device operates as follows. The light from the luminescent lamp 11 is incident on the rear surface of the liquid crystal panel 20 through the back light unit. A control circuit placed on the driving circuit board 30 controls the incident light on the viewing area 21

of the liquid crystal panel 20 to display images and characters.

Fig. 4 is a drawing showing a plan view of the final assembly structure of the conventional liquid crystal display device. Fig. 4 also shows the assembled result of a second support frame 40, liquid crystal panel 20 and back light unit having an assembly structure for mounting to a portable computer. The second support frame 40 is made of metal or plastic, and holds the liquid crystal panel 20 and the back light unit. Here, the driving circuit board 23 is located behind the rear part of the back light unit connected to the liquid crystal panel 20 with a flexible film (not shown).

Fig. 5 shows the assembly structure of the liquid crystal panel 20 and body 60 of the portable computer in the conventional method. The second support frame 40 is mounted to a rear case 50 of the portable computer using screws 43 through screw holes 41. A front case(not shown) having a blank area adjusted to the viewing area is joined at the rear case 50. That is, the liquid crystal panel 20 is mounted with the rear case 50 by the screws 43 locked in the normal direction of the display surface through the screw holes 41 formed on that surface. Although not shown in the drawings, the front case is mounted on the LCD device, opening the viewing area 21 and covering the other parts.

In general, as the size of the portable computer is designed

for easy movement, the same goes for an A4 copy sheet, for example. Therefore, the ratio of the viewing area to the whole surface area of the display and the thickness of the display device affect the quality of the portable computer. However, in a conventional portable computer, screw holes 41 are located on edge portions of the display surface in order to join the second support frame 40 to the rear case 50. As the display area has a screw frame area 42 (Fig. 4) for forming the holes 41, the ratio of the area of the LC panel to the viewing area 21 is reduced.

Furthermore, in the conventional portable computer, as the screws 43 are locked to the liquid crystal display device and the rear case 50 in the normal direction of the display surface, the display part is thick enough to form an assembly device 51 for the screws 43, such as screw holes 41. The second support frame 40 is also large enough to have a space for supporting the screw holes 41. Thus, it is difficult to reduce the weight of the portable computer.

Accordingly, a liquid crystal device is needed having a high viewing ratio of the display, low weight, and reduced thickness for a computer, such as a portable computer.

SUMMARY OF THE INVENTION

Accordingly, the present invention is directed to a computer

that substantially obviates one or more of the problems due to limitations and disadvantages of the related art.

An object of the present invention is to increase the ratio of the viewing area to the whole area of a computer display.

5 Another object of the present invention is to provide a thin, light weight display unit.

10 Additional features and advantages of the invention will be set forth in the description which follows, and in part will be apparent from the description, or may be learned by practice of the invention. The objectives and other advantages of the invention will be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

15 To achieve these and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described, a liquid crystal display device comprises a liquid crystal panel including a display area; a light source joined with the liquid crystal panel; a first frame coupled to a surface of the light unit and sides of the liquid crystal panel; a second frame
20 coupled to edges of the liquid crystal panel and sides of the first support frame; an outer casing; and a fastening part joining together the first support frame, the second support frame, and the

outer casing through the sides of the first support frame, the second support frame, and the outer casing.

In another aspect of the present invention, a portable computer comprises a liquid crystal display device having a display surface and a first plurality of side surfaces; a body having an input device; a cover, coupled to an edge of the body, having a second plurality of side surfaces; and a fastening unit attaching the first plurality of side surfaces of the liquid crystal display device to the second plurality of side surfaces of the cover, the liquid crystal display device being mounted to the cover.

In another aspect of the present invention, a portable computer comprises a liquid crystal display device having a first side surface; a body having an input device; a cover joined with the body and having a second side surface; and a fastening unit joining together the liquid crystal display device and the cover through the first and second side surfaces of the liquid crystal display device and the cover, respectively.

In a further aspect of the present invention a liquid crystal display device comprises a first support frame having a first fastening member at a side surface of the first support frame; a reflector unit adjacent the first support frame; a light source adjacent to the reflector unit; a light guide unit adjacent the

reflector unit; a protection unit adjacent the light guide unit; a prism unit adjacent the protection unit; a diffuser unit adjacent the prism unit; a liquid crystal panel adjacent the diffuser unit; and a second support frame having a second fastening member at a side surface of the second support frame, wherein the reflector unit, the protection unit, the prism unit, and the diffuser unit, the liquid crystal panel are between the first and second support frame, and the first and second support frame are attached to each other through the first and second fastening members through the side surfaces of the first and second support frames.

It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention.

In the drawings:

Fig. 1 is a perspective drawing showing the structure of the

conventional liquid crystal display device;

Fig. 2 is a cross-sectional view of a light-guiding plate and a fluorescent lamp;

Fig. 3a is a plan view of a liquid crystal display showing a screw frame of a first fastening frame;

Fig. 3b is a cross-sectional view of a liquid crystal display illustrating a first fastening frame, a lamp housing, and ground support plates fixed together by a screw;

Fig. 4 shows a plan view of the final assembly structure of the liquid crystal panel, support frame, and back light unit in the conventional liquid crystal display device;

Fig. 5 shows an assembly structure of the liquid crystal display device in the conventional portable computer;

Fig. 6 is a perspective view showing the assembly structure of the parts of the back light unit in accordance with the present invention;

Fig. 7 is a perspective view the assembly structure of the liquid crystal display device, the rear cover, and the front cover in accordance with the present invention;

Fig. 8 is a cross-sectional view of a liquid crystal display according to the present invention illustrating mounting holes at a side of the first fastening frame; and

Fig. 9 shows an assembly structure of the liquid crystal display device and portable computer in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

The present invention provides a mounting hole for a fastening element on a side of a liquid crystal display instead of on a front surface of a liquid crystal display. For example, Fig. 8 shows a first mounting hole 410a formed on a first fastening frame 190. With reference to Fig. 6, the structure of a liquid crystal display according to the present invention will be described in detail.

Referring to Fig. 6, on a first support frame 190 made of plastic, for example, a reflector 140, a light guide 130, a protection sheet 150, a first prism sheet 160, a second prism sheet 170, a diffuser 180, and a liquid crystal panel 300 are stacked sequentially. On the side surface of the first support frame 190, a plurality of first screw holes 410a are formed.

At the edge of the light guide 130, a luminescent lamp 110 and a lamp housing 120 are mounted. The lamp housing 120 has an U-shape and surrounds the luminescent lamp 110.

Furthermore, as the volume of the frames of the present invention is smaller than that of conventional ones, the portable computer of the present invention is lighter. Additionally, as it is not necessary to have screws, the cost for manufacturing can be reduced.

It will be apparent to those skilled in the art that various modifications and variations can be made in the computer having liquid crystal display of the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

In order to join the first support frame 190, the liquid crystal panel 300, and the lamp housing 120, a second support frame 400 preferably made of metal is mounted at the side surface of the first support frame 190. At the side surface of the second support frame 400, a plurality of second screw holes 410b aligned with the first screw holes 410a are formed.

Referring to Fig 7, a liquid crystal display device 700 comprising the first support frame 190, the second support frame 400, and the liquid crystal panel 300 is joined with a rear case 500 and a front case 520. At the side surface of the rear case 500, third screw holes 410c aligned with second screw holes 410b are formed. The rear case 500 and the liquid crystal display device 700 are joined to each other by fastening devices such as screws 430, which are locked to the second and third screw holes 410b and 410c. Although not shown in the drawings, the screws 430 are also locked with the first screw holes 410a.

In another embodiment, in order to join the second support frame 400 and the rear case 500, an adhesive device such as double-sided adhesive tape can be used instead of the second and the third screw holes 410b and 410c. This example has an added advantage in that no screws are needed which makes the manufacturing method easy.

In a further embodiment, the rear case 500 and the second support frame 400 are jointed to each other using hooks and/or other suitable fastening devices including adhesives formed at inner sides of the rear case 500. This embodiment also does not need fastening devices such as screws 430.

Accordingly, in the present invention, the assembling or fastening devices are located at the side surface of the display and not at the front or back side. The assembling devices are preferably screws, hooks or, adhesive materials, for example. The direction of the assembling devices is normal to the side surface of the display, that is, parallel direction with the front (viewing) surface of the display. Moreover, the assembling devices may be formed on the upper and lower sides of the display.

Referring to Fig. 9, the liquid crystal display is mounted to the portable computer. One of the advantages of the portable computer according to the present invention over the conventional portable computer is the higher ratio of the viewing area. Because there are no fastening elements on the display surface, the outer frame of the display area of the present invention is narrower than that of conventional ones. Thus, the ratio of the viewing area can be maximized and the thickness of the display part is made thinner than that of conventional ones.

What is claimed is

1. A liquid crystal display device comprising:

a liquid crystal panel including a display area;

a light source joined with the liquid crystal panel;

a first frame coupled to a surface of the light unit and
sides of the liquid crystal panel;

a second frame coupled to edges of the liquid crystal
panel and sides of the first support frame;

an outer casing; and

a fastening part joining together the first support
frame, the second support frame, and the outer casing through the
sides of the first support frame, the second support frame, and the
outer casing.

2. The liquid crystal device according to claim 1, wherein
the fastening part includes a screw hole.

3. The liquid crystal device according to claim 1, wherein
the sides of the first support frame, the second support frame, and
the outer casing are substantially perpendicular to the viewing
direction of the display device.

4. The liquid crystal device according to claim 1, wherein the first frame supports the light source.

5 5. The liquid crystal device according to claim 1, wherein the second frame protects the liquid crystal panel.

6. A portable computer comprising:

a liquid crystal display device having a display surface and a first plurality of side surfaces;

10 a body having an input device;

a cover, coupled to an edge of the body, having a second plurality of side surfaces; and

15 a fastening unit attaching the first plurality of side surfaces of the liquid crystal display device to the second plurality of side surfaces of the cover, the liquid crystal display device being mounted to the cover.

20 7. The portable computer according to claim 6, wherein the fastening unit includes a screw hole through the first and second side surfaces of the liquid crystal display device and cover, respectively, and a screw in the screw hole.

8. The portable computer according to claim 6, wherein the fastening unit includes an adhesive joining the first plurality of side surfaces of the liquid crystal display device to the second plurality of side surfaces of the cover.

9. A portable computer comprising:

a liquid crystal display device having a first side surface;

a body having an input device;

a cover joined with the body and having a second side surface; and

a fastening unit joining together the liquid crystal display device and the cover through the first and second side surfaces of the liquid crystal display device and the cover, respectively.

10. A liquid crystal display device comprising:

a first support frame having a first fastening member at a side surface of the first support frame;

a reflector unit adjacent the first support frame;

a light source adjacent to the reflector unit;

a light guide unit adjacent the reflector unit;

a protection unit adjacent the light guide unit;

a prism unit adjacent the protection unit;

a diffuser unit adjacent the prism unit;

a liquid crystal panel adjacent the diffuser unit; and

5 a second support frame having a second fastening member

at a side surface of the second support frame, wherein the reflector unit, the protection unit, the prism unit, and the diffuser unit, the liquid crystal panel are between the first and second support frame, and the first and second support frame are
10 attached to each other through the first and second fastening members through the side surfaces of the first and second support frames.

11. The liquid crystal device according to claim 10, wherein
15 the first and second fastening members include a screw hole.

12. The liquid crystal device according to claim 10, wherein the side surfaces of the first and second support frames are substantially perpendicular to the viewing direction of the display
20 device.

13. The liquid crystal device according to claim 10, wherein the first frame supports the light source.

14. The liquid crystal device according to claim 10, wherein
5 the second frame protects the liquid crystal panel.

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ABSTRACT OF THE DISCLOSURE

A liquid crystal display device includes a liquid crystal panel having a display area, a light source joined with the liquid crystal panel, a first frame coupled to a surface of the light unit and sides of the liquid crystal panel, a second frame coupled to edges of the liquid crystal panel and sides of the first support frame, an outer casing, and a fastening part joining together the first support frame, the second support frame, and the outer casing through the sides of the first support frame, the second support frame, and the outer casing.

FIG. 1
PRIOR ART

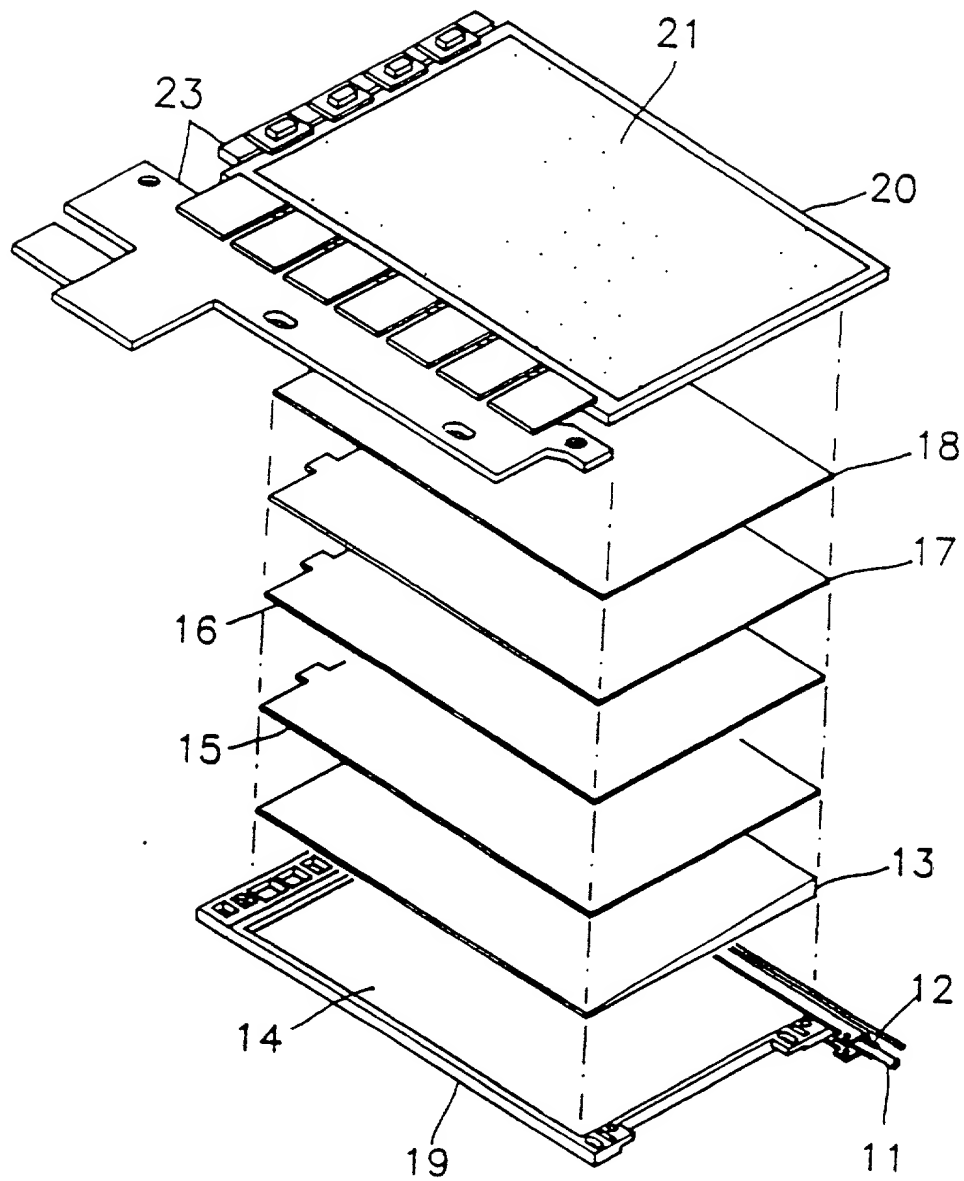


FIG. 2
PRIOR ART

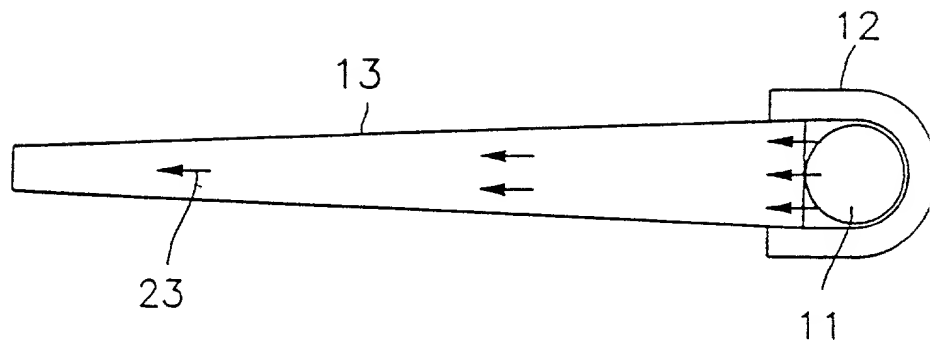


FIG. 3a
PRIOR ART

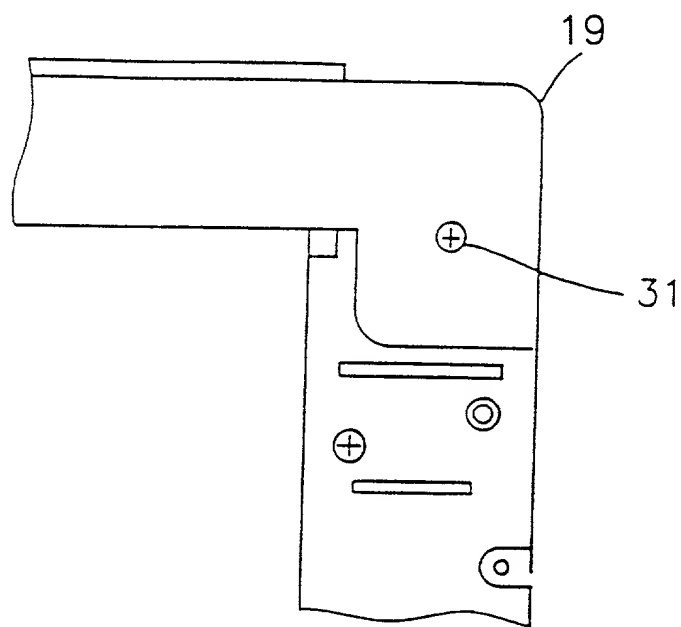


FIG. 3b
PRIOR ART

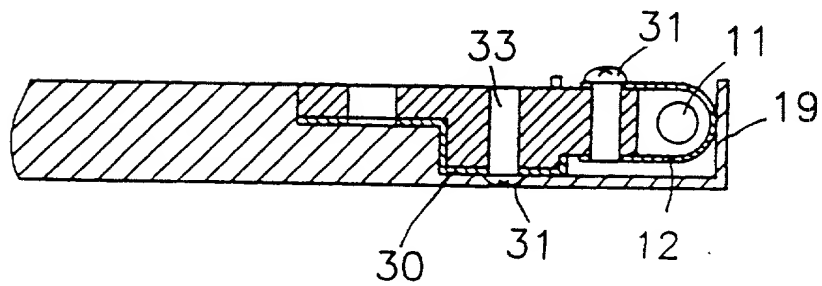


FIG. 4
PRIOR ART

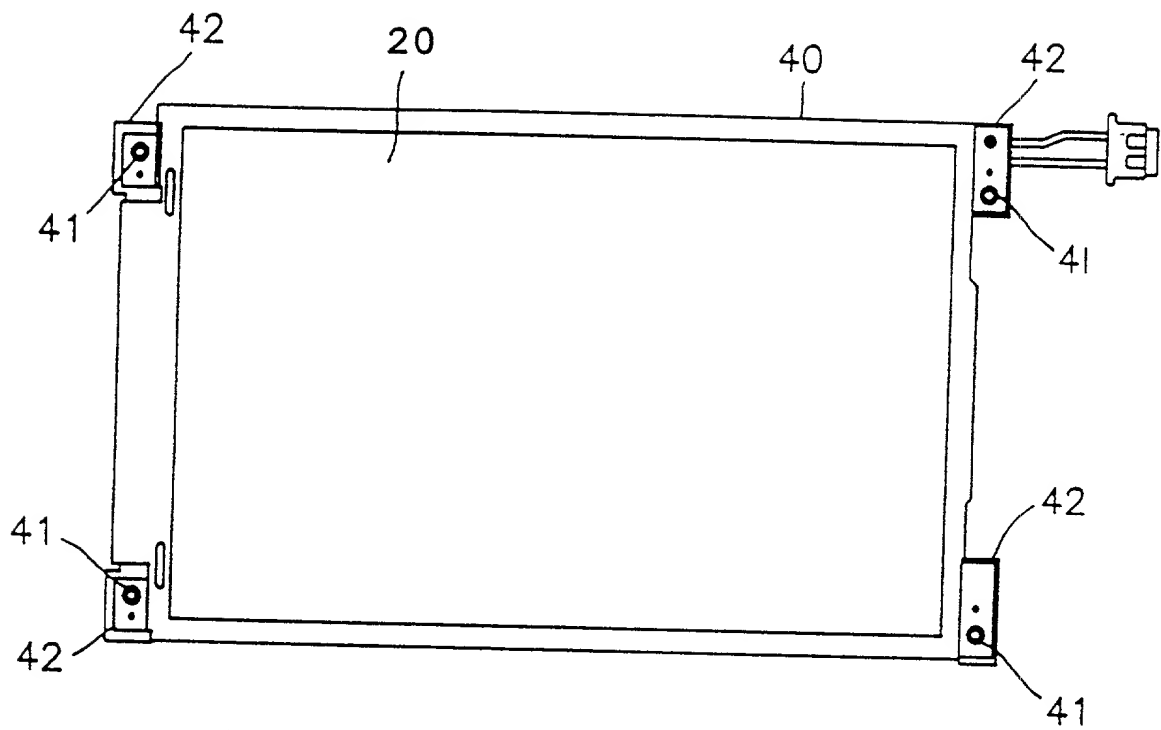


FIG. 5
PRIOR ART

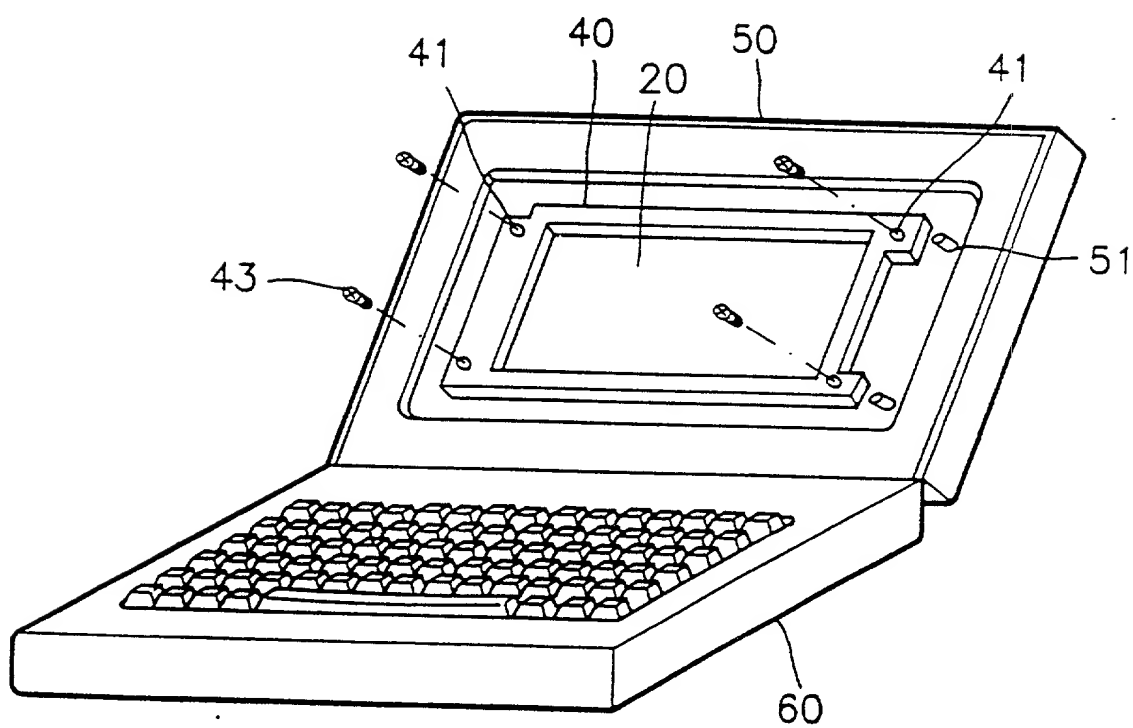


FIG. 6

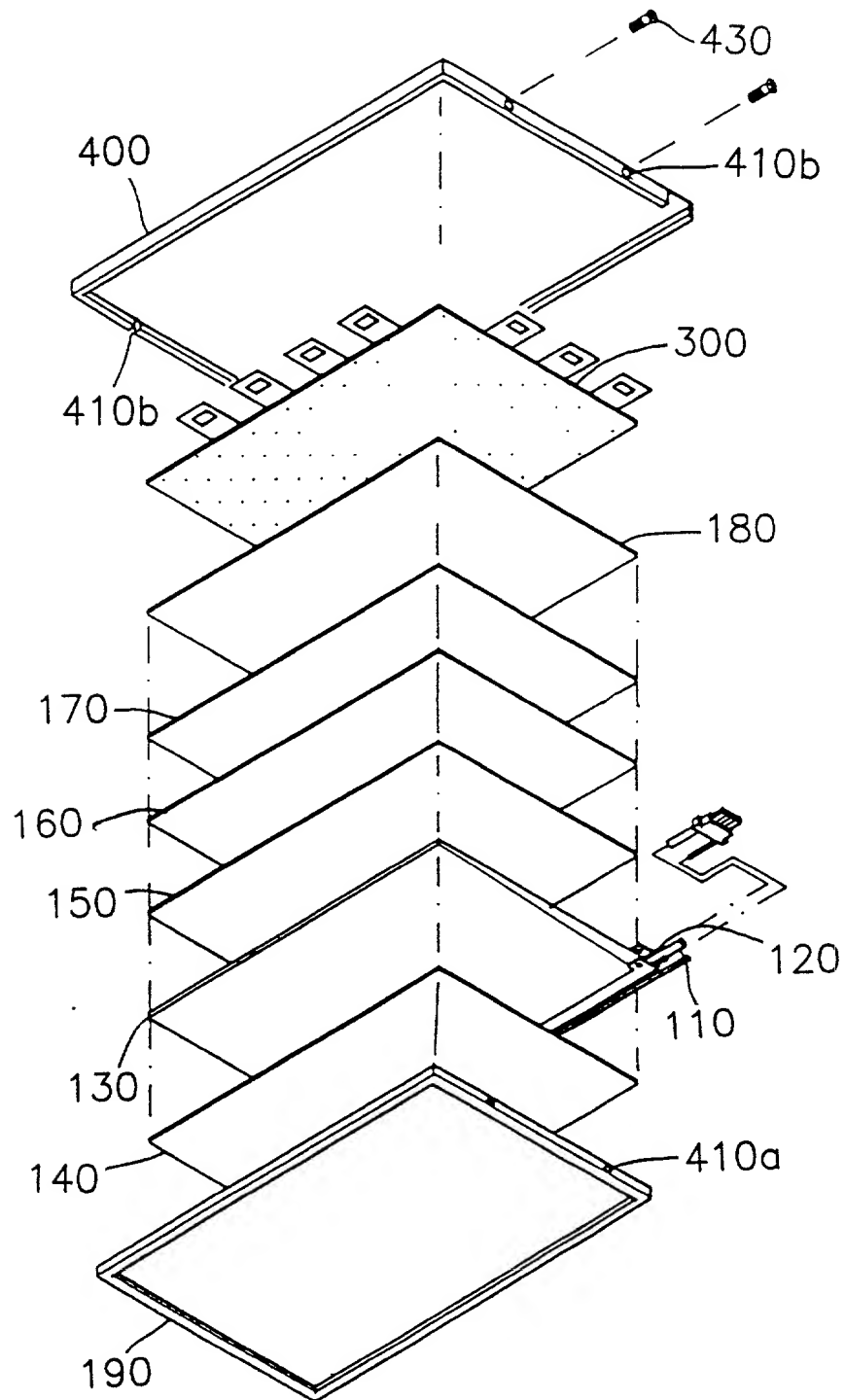


FIG. 7

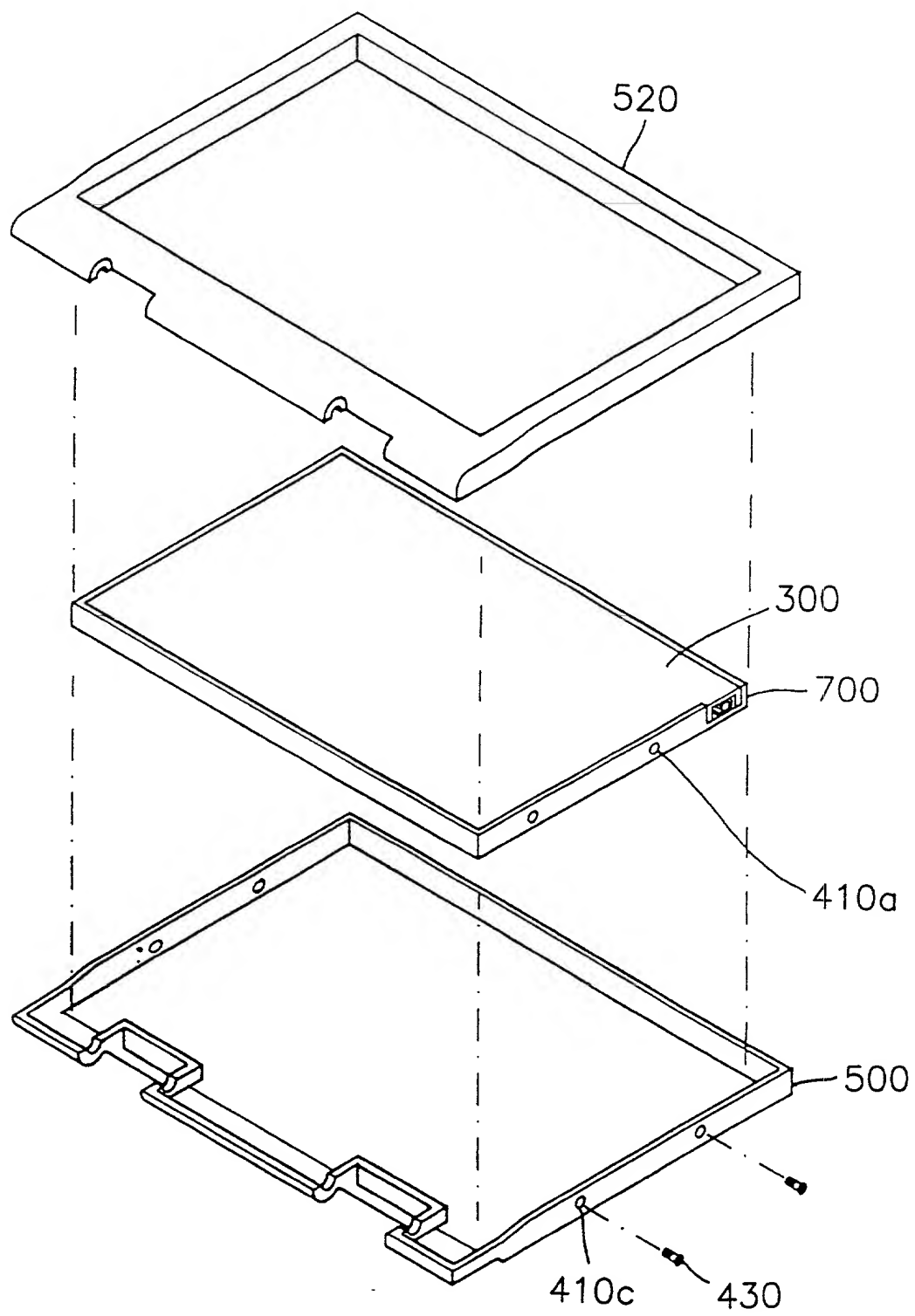


FIG. 8

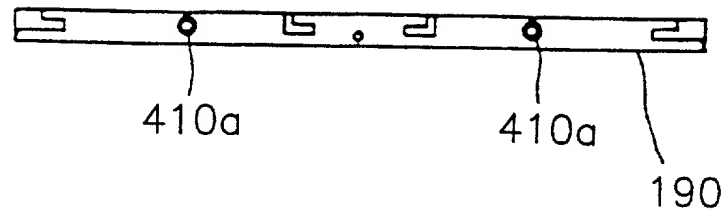
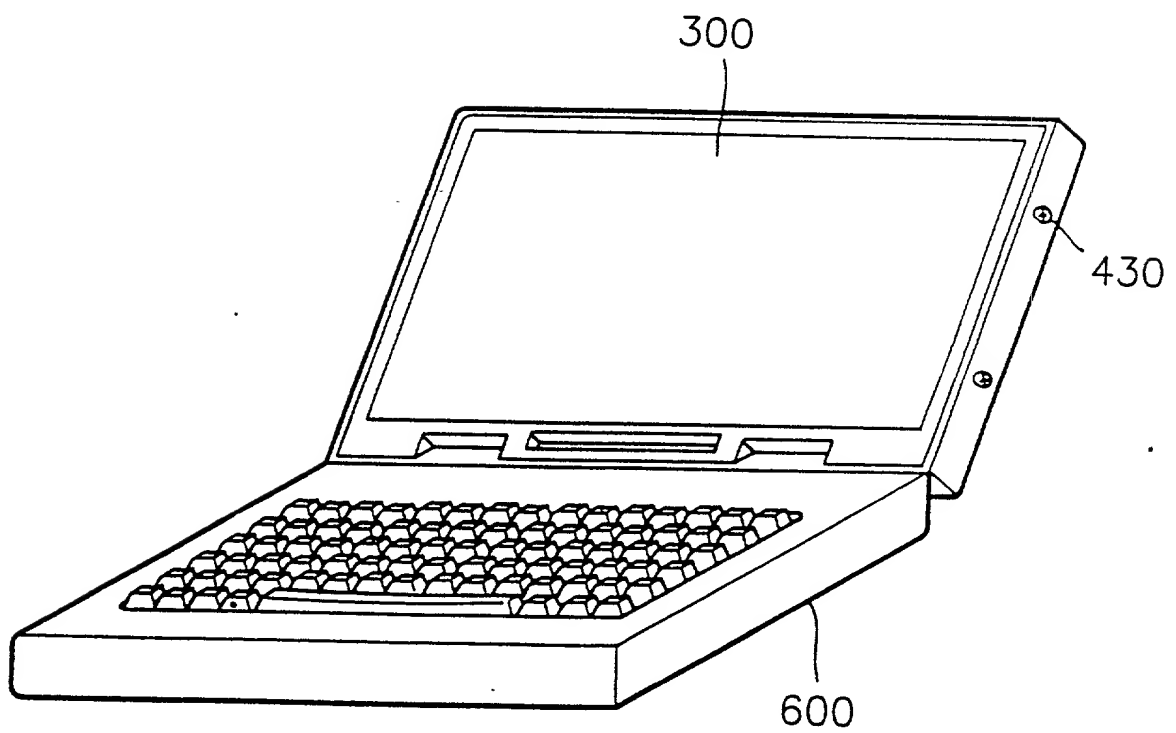


FIG. 9



COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

ATTORNEY DOCKET NO.: 043695-5011

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

COMPUTER HAVING LIQUID CRYSTAL DISPLAY

is attached hereto; or

was filed as United States application Serial No. 08/888,164 on JULY 3, 1997 and was amended on _____ (if applicable); or

was filed as PCT international application Number _____ on _____ and was amended under PCT Article 19 on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the U.S. Patent and Trademark Office information which is material to the patentability of claims presented in this application in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. §119:

| COUNTRY (if PCT, indicate PCT) | APPLICATION NUMBER | DATE OF FILING (day, month, year) | PRIORITY CLAIMED UNDER 35 U.S.C. §119 |
|-----------------------------------|--------------------|--------------------------------------|--|
| KOREA | 97-12899 | 8 APRIL 1997 | [X] Yes [] No |
| KOREA | 97-14278 | 17 APRIL 1997 | [X] Yes [] No |
| | | | [] Yes [] No |
| | | | [] Yes [] No |

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to the patentability of claims presented in this application in accordance with Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. §120:

| U.S. APPLICATIONS | | STATUS (Check One) | | |
|----------------------|------------------|--------------------|---------|-----------|
| U.S. APPLICATION NO. | U.S. FILING DATE | PATENTED | PENDING | ABANDONED |
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| PCT APPLICATIONS DESIGNATING THE U.S. | | | STATUS (Check One) | | |
|---------------------------------------|-----------------|-----------------|--------------------|---------|-----------|
| PCT APPL. NO. | PCT FILING DATE | U.S. SERIAL NO. | PATENTED | PENDING | ABANDONED |
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POWER OF ATTORNEY: as a named inventor, I hereby appoint the following attorneys to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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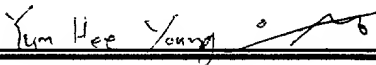

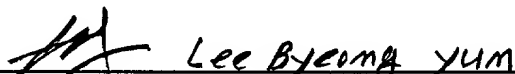
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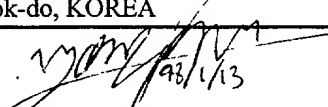

Combined Declaration For Patent Application and Power of Attorney - (Continued)
(includes Reference to PCT International Applications)

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

| | | |
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